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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

OCT 13 2009

**MEMORANDUM**

**SUBJECT:** Summary Subset of Analytical Results from the August 5, 2009, Dalton Utilities Submittal to EPA Report Titled Test America Laboratories, Inc. Analytical Report on Perfluorocarbon (PFC) Analyses Lot #D9E280210; Report Dated June 30, 2009; 416 pages

**FROM:** Connie L. Roberts *CLR*  
Special Assistant to the Director  
Water Protection Division

**TO:** Note to File

Attached is a summary of a subset of the analytical results from the August 5, 2009, Dalton Utilities submittal to EPA titled: "Test America Laboratories, Inc. Analytical Report on Perfluorocarbon (PFC) Analyses Lot #D9E280210." The full report is dated June 30, 2009 and contains 416 pages.

The attached document provides a summary report for each of 4 samples identified as 1, 2, 3, and 4. The samples are described as follows:

- #1: Fresh, dried biosolids cake before the addition of wood waste
- #2: Finished compost aged approximately 6 months
- #3: Finished compost aged approximately 12 months
- #4: Finished compost aged approximately 18 months

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #....: D9E280210-001 Work Order #....: LDV5Q1AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 13:15 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09  
 Prep Batch #....: 9155502 Analysis Time...: 18:04  
 Dilution Factor: 1  
 % Moisture.....: 78 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P FTeA)	17 J	23	ug/kg	6.7
Perfluorododecanoic acid (PFDo A)	230	23	ug/kg	3.8
Perfluorotridecanoic acid (PFT ria)	410	23	ug/kg	5.3
Perfluorobutanoic acid (PFBA)	38	9.3	ug/kg	1.6
Perfluoropentanoic acid (PFPA)	30	9.3	ug/kg	4.1
Perfluorohexanoic acid (PFHxA)	55	9.3	ug/kg	0.93
Perfluoroheptanoic acid (PFHpA )	11	9.3	ug/kg	3.3
Perfluorononanoic acid (PFNA)	94	9.3	ug/kg	2.3
Perfluorodecanoic acid (PFDA)	480	9.3	ug/kg	3.5
Perfluorobutane sulfonate (PFB S)	190	9.3	ug/kg	3.9
Perfluorohexane sulfonate (PFH xS)	ND	9.3	ug/kg	3.6
Perfluorodecane sulfonate (PFD S)	1.4 J	9.3	ug/kg	1.3
Perfluorooctanesulfonate	210	9.3	ug/kg	1.7
Perfluorooctanoic Acid	91	23	ug/kg	4.7

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	80	(50 - 200)
13C4 PFOS	70	(50 - 200)
13C4 PFBA	66	(50 - 200)
13C2 PFHxA	78	(50 - 200)
18O2 PFHxS	78	(50 - 200)
13C5 PFNA	74	(50 - 200)
13C2 PFDA	70	(50 - 200)
13C2 PFUnA	64	(50 - 200)
13C2 PFDoA	59	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #....: D9E280210-001    Work Order #....: LDV5Q1AH    Matrix.....: SOLID  
 Date Sampled....: 05/26/09 13:15    Date Received...: 05/28/09  
 Prep Date.....: 06/16/09    Analysis Date...: 06/25/09  
 Prep Batch #....: 9167471    Analysis Time...: 19:06  
 Dilution Factor: 1  
 % Moisture.....: 78    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	86	23	ug/kg	5.7

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	59	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #....: D9E280210-001 Work Order #....: LDV5Q2AA Matrix.....: SOLID  
Date Sampled....: 05/26/09 13:15 Date Received...: 05/28/09  
Prep Date.....: 06/04/09 Analysis Date...: 06/14/09  
Prep Batch #....: 9155502 Analysis Time...: 20:19  
Dilution Factor: 20  
% Moisture.....: 78 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluoroundecanoic acid (PFUnA)	750	460	ug/kg	170

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C2 PFUnA	92	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #....: D9E280210-002    Work Order #....: LDV5X1AA    Matrix.....: SOLID  
 Date Sampled....: 05/26/09 13:45    Date Received...: 05/28/09  
 Prep Date.....: 06/04/09    Analysis Date...: 06/13/09  
 Prep Batch #....: 9155502    Analysis Time...: 18:53  
 Dilution Factor: 1  
 % Moisture.....: 56    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P FTEA)	93	11	ug/kg	3.3
Perfluorobutanoic acid (PFBA)	93	4.6	ug/kg	0.78
Perfluoropentanoic acid (PFPA)	100	4.6	ug/kg	2.0
Perfluorohexanoic acid (PFHxA)	170	4.6	ug/kg	0.46
Perfluoroheptanoic acid (PFHpA )	290	4.6	ug/kg	1.7
Perfluorohexane sulfonate (PFH xS)	13	4.6	ug/kg	1.8
Perfluorodecane sulfonate (PFD S)	ND	4.6	ug/kg	0.66

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	70	(50 - 200)
13C4 PFOS	82	(50 - 200)
13C4 PFBA	75	(50 - 200)
13C2 PFHxA	85	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	73	(50 - 200)
13C2 PFDA	73	(50 - 200)
13C2 PFUnA	75	(50 - 200)
13C2 PFDoA	71	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #....: D9E280210-002    Work Order #....: LDV5X1AD    Matrix.....: SOLID  
Date Sampled....: 05/26/09 13:45    Date Received...: 05/28/09  
Prep Date.....: 06/16/09    Analysis Date...: 06/25/09  
Prep Batch #....: 9167471    Analysis Time...: 13:22  
Dilution Factor: 10  
% Moisture.....: 56    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (P OSA)	270	110	ug/kg	28

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	113	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #....: D9E280210-002 Work Order #....: LDV5X2AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 13:45 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09  
 Prep Batch #....: 9155502 Analysis Time...: 21:07  
 Dilution Factor: 20  
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluoroundecanoic acid (PFUnA)	660	230	ug/kg	83
Perfluorododecanoic acid (PFDoA)	450	230	ug/kg	37
Perfluorotridecanoic acid (PFTria)	240	230	ug/kg	53
Perfluorononanoic acid (PFNA)	560	91	ug/kg	23
Perfluorodecanoic acid (PFDA)	2100	91	ug/kg	34
Perfluorobutane sulfonate (PFBs)	500	91	ug/kg	38
Perfluorooctanesulfonate	550	91	ug/kg	17
Perfluorooctanoic Acid	1900	230	ug/kg	46

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	102	(50 - 200)
13C4 PFOS	101	(50 - 200)
13C4 PFBA	97	(50 - 200)
13C2 PFHxA	102	(50 - 200)
18O2 PFHxS	103	(50 - 200)
13C5 PFNA	97	(50 - 200)
13C2 PFDA	100	(50 - 200)
13C2 PFUnA	101	(50 - 200)
13C2 PFDoA	107	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.



Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV501AD Matrix.....: SOLID  
Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09  
Prep Date.....: 06/16/09 Analysis Date...: 06/25/09  
Prep Batch #....: 9167471 Analysis Time...: 20:10  
Dilution Factor: 1  
% Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	170	11	ug/kg	2.8

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	71	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #.... D9E280210-003 Work Order #.... LDV501AA Matrix.....: SOLID  
 Date Sampled.... 05/26/09 14:10 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09  
 Prep Batch #.... 9155502 Analysis Time...: 19:09  
 Dilution Factor: 1  
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P FTeA)	77	11	ug/kg	3.3
Perfluorobutanoic acid (PFBA)	100	4.5	ug/kg	0.77
Perfluoropentanoic acid (PFPA)	210	4.5	ug/kg	2.0
Perfluorohexane sulfonate (PFH xS)	9.7	4.5	ug/kg	1.7
Perfluorodecane sulfonate (PFD S)	1.1 J	4.5	ug/kg	0.66

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	55	(50 - 200)
13C4 PFOS	79	(50 - 200)
13C4 PFBA	74	(50 - 200)
13C2 PFHxA	80	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	65	(50 - 200)
13C2 PFDA	70	(50 - 200)
13C2 PFUnA	68	(50 - 200)
13C2 PFDoA	64	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV502AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09  
 Prep Batch #....: 9155502 Analysis Time...: 21:24  
 Dilution Factor: 20  
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorononanoic acid (PFNA)	330	90	ug/kg	23
Perfluoroundecanoic acid (PFUnA)	500	230	ug/kg	82
A)				
Perfluorododecanoic acid (PFDoA)	240	230	ug/kg	37
A)				
Perfluorohexanoic acid (PFHxA)	140	90	ug/kg	9.1
Perfluoroheptanoic acid (PFHpA)	270	90	ug/kg	33
)				
Perfluorodecanoic acid (PFDA)	2000	90	ug/kg	34
Perfluorobutane sulfonate (PFBS)	550	90	ug/kg	38
S)				
Perfluorooctanesulfonate	230	90	ug/kg	17
Perfluorooctanoic Acid	2100	230	ug/kg	46

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	84	(50 - 200)
13C4 PFOS	85	(50 - 200)
13C4 PFBA	83	(50 - 200)
13C2 PFHxA	85	(50 - 200)
18O2 PFHxS	86	(50 - 200)
13C5 PFNA	89	(50 - 200)
13C2 PFDA	84	(50 - 200)
13C2 PFUnA	80	(50 - 200)
13C2 PFDoA	81	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV503AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/16/09  
 Prep Batch #....: 9155502 Analysis Time...: 14:33  
 Dilution Factor: 10  
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotridecanoic acid (PFT rIA)	290	110	ug/kg	26

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C2 PFDoA	107	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004 Work Order #....: LDV511AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:20 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09  
 Prep Batch #....: 9155502 Analysis Time...: 19:25  
 Dilution Factor: 1  
 % Moisture.....: 42 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P PTEA)	85	8.6	ug/kg	2.6
Perfluorobutanoic acid (PFBA)	77	3.4	ug/kg	0.59
Perfluoropentanoic acid (PFPA)	160	3.4	ug/kg	1.5
Perfluorohexane sulfonate (PFH xS)	19	3.4	ug/kg	1.3
Perfluorodecane sulfonate (PFD S)	0.95 J	3.4	ug/kg	0.50

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	51	(50 - 200)
13C4 PFOS	74	(50 - 200)
13C4 PFBA	69	(50 - 200)
13C2 PFHxA	80	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	69	(50 - 200)
13C2 PFDA	66	(50 - 200)
13C2 PFUnA	67	(50 - 200)
13C2 PFDoA	63	(50 - 200)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004    Work Order #....: LDV511AD    Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:20    Date Received...: 05/28/09  
 Prep Date.....: 06/16/09    Analysis Date...: 06/25/09  
 Prep Batch #....: 9167471    Analysis Time...: 00:00  
 Dilution Factor: 10  
 % Moisture.....: 42    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	310	86	ug/kg	21

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	100	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004 Work Order #....: LDV512AA Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:20 Date Received...: 05/28/09  
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09  
 Prep Batch #....: 9155502 Analysis Time...: 21:40  
 Dilution Factor: 20  
 % Moisture.....: 42 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluoroundecanoic acid (PFUnA)	610	170	ug/kg	62
Perfluorododecanoic acid (PFDoA)	320	170	ug/kg	28
Perfluorotridecanoic acid (PFTria)	230	170	ug/kg	40
Perfluorohexanoic acid (PFHxA)	190	69	ug/kg	6.9
Perfluoroheptanoic acid (PFHpA)	320	69	ug/kg	25
Perfluorononanoic acid (PFNA)	400	69	ug/kg	17
Perfluorodecanoic acid (PFDA)	2000	69	ug/kg	26
Perfluorobutane sulfonate (PFBS)	610	69	ug/kg	29
Perfluorooctanesulfonate	360	69	ug/kg	13

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	99	(50 - 200)
13C4 PFOS	98	(50 - 200)
13C4 PFBA	95	(50 - 200)
13C2 PFHxA	99	(50 - 200)
18O2 PFHxS	102	(50 - 200)
13C5 PFNA	103	(50 - 200)
13C2 PFDA	94	(50 - 200)
13C2 PFUnA	99	(50 - 200)
13C2 PFDoA	103	(50 - 200)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004    Work Order #....: LDV513AA    Matrix.....: SOLID  
 Date Sampled....: 05/26/09 14:20    Date Received...: 05/28/09  
 Prep Date.....: 06/04/09    Analysis Date...: 06/16/09  
 Prep Batch #....: 9155502    Analysis Time...: 16:12  
 Dilution Factor: 50  
 % Moisture.....: 42    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctanoic Acid	4500	430	ug/kg	88

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	102	(50 - 200)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.



Dalton Utilities

Client Sample ID: #1

General Chemistry

Lot-Sample #....: D9E280210-001    Work Order #....: LDV5Q    Matrix.....: SOLID  
Date Sampled....: 05/26/09 13:15    Date Received...: 05/28/09  
% Moisture.....: 78

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	78	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #2

General Chemistry

Lot-Sample #....: D9E280210-002    Work Order #....: LDV5X  
Date Sampled....: 05/26/09 13:45    Date Received...: 05/28/09  
% Moisture.....: 56

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	56	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #3

General Chemistry

Lot-Sample #....: D9E280210-003    Work Order #....: LDV50    Matrix.....: SOLID  
Date Sampled....: 05/26/09 14:10    Date Received...: 05/28/09  
% Moisture.....: 56

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	56	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #4

General Chemistry

Lot-Sample #....: D9E280210-004    Work Order #....: LDV51    Matrix.....: SOLID  
Date Sampled....: 05/26/09 14:20    Date Received...: 05/28/09  
% Moisture.....: 42

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	42	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	